of telling him, without letting him know who has 'sung' him; but the man who leaves the bone about must, of course, be very careful to destroy his own tracks. Have you ever heard of faith-healing? Well, dying from bone-pointing is faith-dying! Goggle Eye, after he had found the bones lying about, knew exactly what was going to happen to him—and of course it did."

"You cannot change a blackfellow into a white man, if you try; you only make a bad, cunning, sly old blackfellow. I don't mean you can't make a blackfellow into a better blackfellow. I know that can be done, if he is kept a blackfellow, true to his blackfellow instincts." A. C. H.

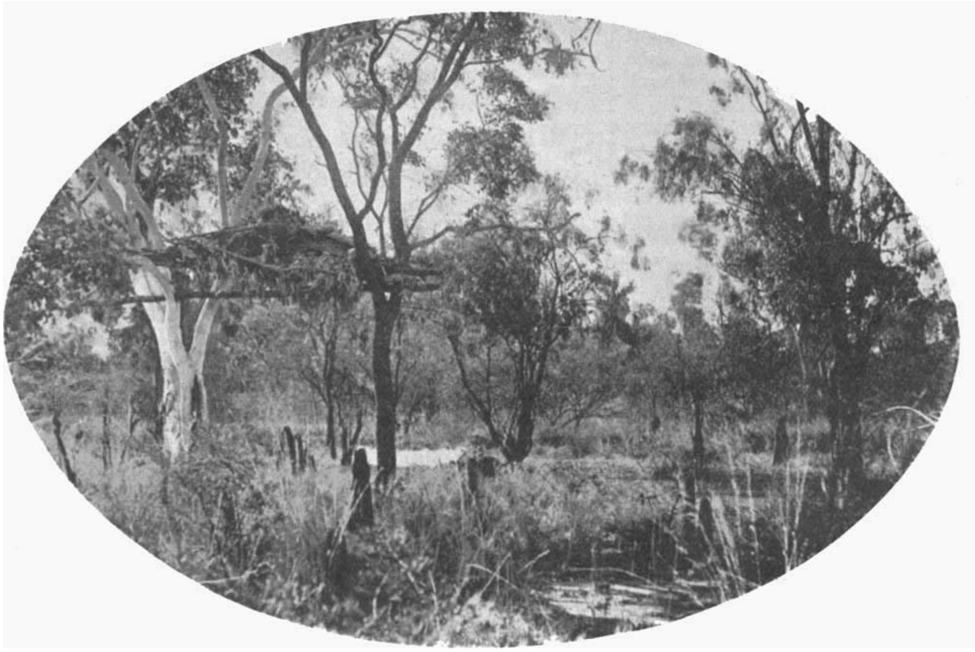

Fig. 1.—Tree-burial, south of the Roper River. From "The Little Black Princess."

NOTES.

The Nobel prizes in science have this year been awarded as follows:—The prize for physics to Prof. P. Lenard, of the University of Kiel, for his investigations on kathode rays; the prize for chemistry to Prof. Adolf von Bäyer, of the University of Munich, for the development in organic chemistry and chemical industry resulting from his works on organic colouring matters and hydro-aromatic compounds; the medical prize to Dr. Robert Koch, for his discoveries in connection with tuberculosis. The prizes, consisting of a sum of about 7700*l*., an illuminated diploma, and a gold medal with an appropriate inscription, were presented by King Oscar on December 10 at the annual ceremony in commemoration of the founder of the institution.

The following note appeared in the *Times* of December 7:—Sir William Thiselton-Dyer, whose resignation of the post of director of the Royal Botanic Gardens at Kew is announced, has held that appointment since 1885, and for ten years—1875–1885—before his promotion he was assistant director. His successor, Lieut.-Colonel David Prain, had a distinguished university career at Aberdeen and Edinburgh before he entered the Indian Medical Service in 1884. Three years after his arrival in India he was nominated curator of Calcutta Herbarium; in 1895 he became professor of botany at the Medical College, Calcutta, and superintendent of the Royal Botanic Garden there, and in 1898 he was appointed director of the Botanical Survey of India. He is forty-eight years of age.

The German Anatomical Society has decided to erect a memorial of its honorary president, the late Prof. Albert von Kölliker. The memorial will be erected in Würzburg, with which the famous teacher and investigator was intimately associated.

Prof. E. Riecke, professor of experimental physics and applied electricity in the University of Göttingen, and also director of the Physical Institute, celebrated his sixtieth birthday on December 1; whilst Prof. R. Fittig, emeritus professor of chemistry of the University of Strassburg, celebrated his seventieth birthday on December 6.

The committee appointed to carry the proposal of a memorial to the late Prof. Virchow into execution has now, we learn from the *British Medical Journal*, a sum of 4000*l*. at its disposal. Of this amount, 1800*l*. has been contributed by subscribers and 2200*l*. by the city of Berlin. Three prizes, of the value respectively of 150*l*., 100*l*., and 50*l*., are offered for the best design of a memorial. Drawings must be sent in before April, 1906.

There is a movement on foot in German chemical and technical circles to erect a statue in Freiburg, Saxony, to the memory of the late Prof. Dr. Clemens Winkler, who was professor in the Royal Mining Academy at Freiburg, and died in Dresden last year. The proposed memorial is to take the form of a large block of granite decorated with a medallion picture of the deceased investigator and a short account of his life's work.

The French Académie des Inscriptions et Belles Lettres has elected Dr. Arthur Evans, keeper of the Ashmolean Museum, and Mr. Barclay, head keeper of the department of coins and medals in the British Museum, corresponding members of the academy.

The thirteenth meeting of the International Congress of Prehistoric Anthropology and Archæology will be held at Monaco, under the patronage of Prince Albert the First, on April 16–21, 1906. Particulars as to the congress may be obtained from the general secretary, Dr. Verneau, 61 Rue de Buffon, Paris.

At a meeting of the British committee for the Marseilles International Exhibition of Oceanography and Sea

Fisheries held last Friday, a central committee was nominated, consisting of Sir John Murray, K.C.B., the honorary president, Captain D. Wilson-Barker, Mr. W. E. Archer, Dr. H. O. Forbes, Mr. E. W. L. Holt, Dr. H. R. Mill, Dr. P. C. Mitchell, Prof. D'Arcy W. Thompson, C.B., Mr. J. W. Towse, and Dr. G. H. Fowler as honorary secretary.

A CONFERENCE on smoke abatement and an exhibition of smoke-preventive appliances, arranged by the Royal Sanitary Institute and the Coal-Smoke Abatement Society, were opened at the large hall of the Horticultural Society on Tuesday. At the conference parts of an address by Sir Oliver Lodge, who was prevented by illness from being present, were read by Sir William Richmond; and at the conclusion of the reading a paper entitled "Is London Fog Inevitable?" was contributed by Dr. W. N. Shaw.

THE dinner of the Institute of Chemistry was held on Monday at the Hotel Metropole, the president, Mr. David Howard, being in the chair. Responding to the toast of the institute, the president said that they had a very high ideal when they founded the institute; they wished to raise the standard of the chemist to something like the same level as that of the other learned professions. The position of the professional chemist was higher in England than it was anywhere else, and why? Because there was that independence of thought, that individual excellence and individual devotion to duty which was required in a true professional spirit.

THE seventeenth annual dinner of the Institution of Electrical Engineers took place on December 8 at the Hotel Cecil. A distinguished gathering assembled. Short speeches, in proposing and responding to the various toasts, were delivered by Mr. Babington Smith, the president (Mr. John Gavey), Sir Alexander Kennedy, F.R.S., Mr. E. Cunliffe Owen, Mr. Alexander Siemens, Mr. John G. Maydon, Mr. W. M. Mordey, Sir Alexander Binnie, and Dr. Budde, president of the Verband Deutscher Elektrotechniker of Berlin. Dr. Budde remarked that, speaking on behalf of his fellow electricians in Germany, he gratefully acknowledged the thought and the spirit expressed in the invitation to himself to be their representative as guest at the institution. Contact, he said, between the scientific and technical men of all countries cannot be too close. There are matters enough tending to separate nations, and therefore it cannot be too strongly pressed that research and intellectual labour form a tie which will always draw together the best spirits of the world, and must tend to promote international solidarity.

ON Saturday, December 9, a very interesting ceremony took place at the Royal Forest Hotel, Chingford, when a presentation was made to Mr. Wm. Cole, the founder of the Essex Field Club, in honour of the completion of his twenty-five years of service as hon. secretary, editor of the publications, and curator of the two museums founded by the club. At the instigation of the president, Mr. Miller Christy, a "recognition fund" was started a few months ago with Prof. Meldola as chairman, Mr. David Howard as treasurer, Mr. Christy as secretary, and a committee. The invitations issued on behalf of the movement were most cordially responded to, and the fund asked for was exceeded long before the subscription list was closed. At the dinner at Chingford Prof. Meldola presided and made the presentation on behalf of the subscribers, Mr. Cole and his brothers and sisters, all of whom had cooperated with him in carrying out the work of the club during the whole period of its existence, being present as the guests of the evening. The presentation took the form of an illuminated address and a purse. Among those who were present to support the chairman, and who bore testimony to the value of the work of the club and of the services of the hon. secretary and his family, were Mr. Victor Buxton, the High Sheriff of Essex, Mr. Christy and Mr. David Howard, the president and treasurer of the club, Mr. T. V. Holmes and Prof. Boulger, past-presidents, Mr. Gellatly, representing the verderers of Epping Forest, Messrs. W. Whitaker and Horace B. Woodward, hon. members of the club, Mr. W. M. Webb, representing the Selborne Society, and others. A very large number of appreciatory letters had also been sent, and were read from the chair, among the writers being the Countess of Warwick, Lord Rayleigh, Sir John Evans, Mr. E. N. Buxton, Profs. Ray Lankester, Marshall Ward, E. B. Poulton, and J. B. Farmer, Dr. Horace Brown, Mr. F. W. Rudler, Dr. J. C. Thresh, the chairman of the Essex County Council, the chairman of the Epping Forest committee, and all the past-presidents of the club other than those who were present. After the reading and presentation of the address by the chairman, and the handing of the purse by the treasurer, Mr. Cole returned thanks on behalf of himself and family. In the course of his remarks he laid emphasis on the services which the chairman of the evening had specially rendered to the club as their first and eighth president, and who had ever taken the keenest interest in their work. He produced a copy of the original inaugural address delivered by Prof. Meldola in 1880, and pointed out that the general policy of the club had been sketched out therein, and that it, with subsequent addresses, had been to them as models laying down the lines on which the work of their own and of all kindred societies ought to be conducted. In concluding, Mr. Cole also directed attention to several branches of work which he hoped to see the club take up in the future, among these being the establishment of a marine biological station, and the preservation, in connection with the photographic survey, of Essex folklore and dialects by means of phonographic records.

AT a meeting of the Institution of Civil Engineers on December 5, the Hon. Charles A. Parsons, C.B., F.R.S., and Mr. G. G. Stoney, in a paper read before the institution, traced the evolution of the steam-turbine from the time of Hero of Alexandria, following the chief steps in development that have led to the types in present use. After describing and discussing the chief characteristics of the three types of steam-turbine, which practically cover the whole field of useful turbine inventions, viz. the Parsons turbine, introduced in 1884, the De Laval turbine in 1888, and the Curtis turbine in 1902, the development of the Parsons turbine was dealt with. A good vacuum is required for the economical working of steam-turbines, and certain special conditions and arrangements must be observed in order to obtain a vacuum of 27½ inches to 28 inches. An apparatus called a vacuum-augmenter has been designed by the authors, and consists of a steam jet placed in a contracted pipe between the condenser and the air-pump. With this apparatus, a total net reduction of steam-consumption of about 8 per cent. at full load has been obtained. Experience gained from cross-Channel steamers and yachts shows that the propellers of turbine vessels do not race in a heavy seaway, that the vessels maintain their smooth-water speed to a remarkable extent in heavy seaway, and that they start, stop, and manœuvre promptly.

IN a recent issue of *Scientific Investigations* (*Irish Fisheries*), 1904, Prof. G. H. Carpenter describes the

Pycnogonida, or sea-spiders, of the Irish seas, naming two new representatives of the group, each of which is figured.

"VOLITION IN MICRO-ORGANISMS" is the translation of the title of a paper by Mr. R. B. Mesén, published at San José, Costa Rica, apparently as the first part of a serial entitled *Publicaciones Nuevas por Contribucion de Amigos*. While admitting that the activity of such organisms is automatic, and due in the first instance to external stimulants, the author considers that such "automatomism" constitutes the basis of the human will, and that there is a complete gradation from the former to the very highest developments of the latter.

PERHAPS the most generally interesting article in the November number of the *American Naturalist* is one in which Mr. F. B. Loomis attributes the phenomenon in animals commonly known as "over specialisation" to "momentum." As examples of structures coming under the designation of over specialisation, the author cites the tusks of the sabre-toothed tigers, the radiolarian shell, the sutures of ammonites, sponge-spicules, and the horns of wild sheep, wapiti, and elk. A variation started in one particular line tends, in the author's opinion, to develop in that one direction; if the feature be harmful the development dies, otherwise it may continue *ad infinitum*. This theory of momentum, it is added, has not been credited with the importance to which it is entitled. Whether we are very much more forward for this supposed explanation of a very obvious feature in development may perhaps be open to doubt.

FROM the entomological division of the U.S. Department of Agriculture we have received a copy of a catalogue of exhibits of economic entomology at the recent St. Louis Exhibition, forming Bulletin No. 47. The whole exhibit was intended to bring into prominence the general scope of the work of the entomological division. Intimately connected with this is a memoir on the Mexican cotton-boll weevil, by Messrs. Hunter and Hinds, forming Bulletin No. 45 of the entomological division of the U.S. Agricultural Department. This weevil (*Anthonomus grandis*) has the evil distinction of having developed during the last twenty years from an insignificant into a notorious insect. In 1885 it was ascertained for the first time that this weevil attacked cotton in Mexico, and between that date and 1902 it crossed the Rio Grande into Texas, where it has since spread with extraordinary rapidity, and inflicted enormous losses on cotton-growers. After spreading for the first few years very quickly, it was checked for a time by unfavourable seasons, but meeting with suitable conditions in 1898 it soon colonised the greater part of the State. It was hoped that in ten years' time Texas would double its output of more than ten million bales of cotton, but this is now regarded as impossible.

IN the course of an article on western explorations for fossil vertebrates, published in the October number of the *Popular Science Monthly*, Prof. H. F. Osborn states that "it is an extremely slow and difficult matter to prepare a fossil, however carefully collected, for exhibition. It takes two years or more to work out the collections of a single season; the result is that most of our museums are collecting materials more rapidly than they can be worked. . . . With larger endowments or with special gifts these treasures could be more rapidly brought to light." It will not fail to be noticed that public exhibition of these wondrous fossils, when properly mounted, is regarded by American museum officials as a matter of prime importance. Those who pay for these institutions do not like the treasures hidden away for the sole benefit of the student.

A CHARACTERISTIC of modern American museums is formed by the restored models of extinct animals, of which there are scarcely any in the corresponding institutions of this country. A considerable number of such models were used by Prof. Osborn to illustrate his discourse on progress in mammalian palæontology during the last decade in America, delivered before the International Zoological Congress at Berne last year. The report of this lecture, published in the *Comptes rendus* of the congress, contains photographs of these models, one of the most spirited of which is herewith reproduced. In this instance, the restoration has been a comparatively easy task, as the animal belongs to an existing genus, but the workers under the author's direction have not hesitated to attempt to reproduce the external form of the Tertiary titanotheres and uintatheres, and even of the giant reptiles of the Jurassic and Cretaceous. It may be hoped that we shall ere long see some of these excellent restorations in our own museums. The author points out that there are three fossil elephants in America, viz. the mammoth (*Elephas primigenius*) in the far north, *E. columbi* (akin to *E. antiquus*) chiefly in the central States, and *E. imperator* (allied to *E. meridionalis*) in the south. Taken as a whole, Prof. Osborn's record of progress is little short of marvellous, and ought to make European palæontologists jealous, if jealousy could be supposed to exist in matters scientific.

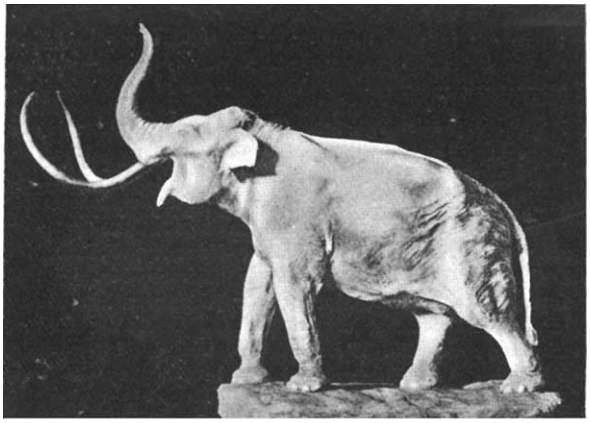

FIG. 1.—Model of an Extinct Elephant (*Elephas imperator*).

THE report by Dr. Ashburton Thompson on the fourth outbreak of plague at Sydney in 1904 adduces further evidence on the part played by rats in the communication of plague to man. During the three last plague epidemics in this city, an epizootic among the rats was always found to precede the epidemic in man.

THE *Bulletin of the Johns Hopkins Hospital* for November (xvi., No. 176) contains the first of the Herter lectures on the contributions of pharmacology to physiology by Prof. Hans Meyer, the second part of the paper by Mr. Martin on the cause of the heart beat, and articles of considerable anatomical and medical interest.

THE October number of *Naturen*, published at the Museum, Bergen, contains an article by Prof. L. Kny on the sensitivity of plants, and a historical summary of the researches on the nature of alcoholic fermentation written by Mr. P. R. Sollied.

THE American gooseberry mildew, *Sphaerotheca mors-uvae*, which was reported from Ireland in 1900, and from Russia in the succeeding year, has also appeared in Sweden. Dr. J. Eriksson, writing in Bulletin No. 87 of the experimental station of the Royal Agricultural College, traces the disease that developed in Karlshamm, in the south of Sweden, to bushes that had been imported from Denmark.

THE monthly journal *Tropical Life* deals chiefly with tropical agriculture and commerce. Reference is made in the November number to two American machines recently brought out, the one a sugar-cane harvester, the other an auto-cottonpicker. The latter machine is provided with two long mechanical arms moving lightly in a universal joint; along each arm runs an endless belt studded with hooks. The arms are tilted to come in contact with the bolls, when the hooks pull away the whole mass, and the cotton passes along the belt to a receptacle. The possibility of utilising banana stems and trash for the manufacture of paper is discussed in view of the large amount of material that is produced in the cultivation of the fruit.

THE cultivation of tomatoes under glass, with special reference to the value of pruning, is discussed in Bulletin No. 105 issued from the Hatch Experimental Station of the Massachusetts Agricultural College. The writer, Mr. G. E. Stone, advocates planting in beds rather than in pots, although the root restriction in pots favours early maturity. Pruning is said to promote early ripening and to produce increased size of fruit. There is some difference of opinion whether it is better to prune to one or three stems, but there is a general consensus in favour of cutting out the leader.

THE report of the chief of the United States Weather Bureau for the fiscal year 1903–4 (pp. xxxix+381) contains, in addition to tables of observations and summaries at some 1650 stations, an interesting account of the very useful operations of that organisation. Weather forecasts for thirty-six and forty-eight hours in advance are issued for each State, besides special warnings of gales, cold waves, floods, &c. To mention one case only of the utility of the storm warnings—a hurricane which advanced from the West Indies destroyed property to the value of 100,000 dollars during its progress over Florida, but, owing to timely notice, comparatively little damage was done to vessels, as they remained in port in consequence of the warnings. Prof. W. L. Moore reiterates the hope that the time will come when it will be possible to forecast the weather for coming seasons, but that time has not yet arrived, and the officials of the Weather Bureau have been instructed to warn the public against imposition by long-range forecasters. A course of lectures on meteorology has been delivered by Prof. Abbe to students frequenting the Bureau, and we understand that this useful practice is now being carried out at our own Meteorological Office. The lectures present the results of work done by some of the ablest meteorologists in various parts of the world, and undoubtedly tend to excite greater interest in the science generally.

IN the *Transactions of the American Mathematical Society* for October Mr. F. R. Sharpe discusses the stability of motion of viscous liquids. It was found by Reynolds in 1895 that for a liquid of density ρ and viscosity μ moving between two planes at distance $2b$ apart, the motion was unstable when $2b\rho U/\mu > 517$, while for a cylindrical pipe of radius a the critical velocity was given by $2ba/\mu = 1034$. Mr. Sharpe now obtains for the first case the constant 167 instead of 517, and for the second 470 instead of 1034.

IN the *Smithsonian Miscellaneous Collections*, vol. xlvii., Prof. E. W. Scripture gives a first report of his studies on the construction of a vowel organ. The first experiments were made with reeds, but it was soon found necessary to replace these by rubber membranes held in various frames, and representing more closely the action of the human glottis. It is now possible to imitate all the vowels and their variations, and the remaining problem is to replace the rubber glottis by something that changes its form of vibration for different vowels and does not alter with time. When this can be done it will be possible to construct either a complete organ or a vowel register such as could be effectively used in church music. A register of one octave would require 124 vowel pipes.

IN a note contributed to the *Journal of the Royal Microscopical Society* (first read before the New York Microscopical Society in April last) Mr. Daniel D. Jackson advances the view that the movements of diatoms are caused by the evolution of gas. This idea was first suggested to the author by noticing the behaviour of a lithia tablet in a glass of water. The bubbles of carbonic acid gas given off set up the exact motions in the tablet that have been so often described for the movements of diatoms —"a sudden advance in a straight line, a little hesitation, then other rectilinear movements, and, after a short pause, a return upon nearly the same path by similar movements." Mr. Jackson next made small models of diatoms of aluminium, 2 mm. thick, having longitudinal grooves resembling those of the diatoms. When placed in caustic soda these models not only reproduced the actual movements of the diatoms, but also gave rise to currents in the matter closely resembling those described by Prof. H. L. Smith as the result of observations made by placing indigo in the water.

WE have received the *Transactions of the English Ceramic Society*, including the papers and discussions for the season 1904–5. It is satisfactory to note that the president, in the course of his address, considered that the scorn for technical instruction affected by pottery manufacturers in the past appeared to be dying out. Allusion was also made to the steps taken by the Joint Committee of Manufacturers of Staffordshire to foster research in pottery by offering prizes for original work bearing on certain subjects. The society appears to be in a prosperous condition, and its efforts are becoming more and more appreciated both at home and abroad. Amongst the various papers we notice an interesting contribution by the pottery instructor, Dr. J. W. Mellor, on crystallisation in pottery.

IN No. 7 of the Bulletin of the Royal Academy of Belgium Prof. W. Spring describes experiments extending his well known work on the colour of natural waters. He comes to the conclusion that the calcium compounds present in natural waters have no colour peculiar to themselves, and hence are not responsible for the green tint of many waters containing them. This is probably due to the diffraction produced by minute solid particles, the presence of which can be demonstrated by an intensely luminous ray of light. Calcium salts really tend to conserve the pure blue colour of water by causing the elimination of ferric salts and humic materials. When a highly calcareous water is of a greenish hue it generally indicates that there is an equilibrium between the influx of brownish water containing humic material and ferric salts, and the purifying action of the calcium salts. In No. 8 of the same Bulletin Prof. Louis Henry discusses in a theoretical paper the properties of water and their relation to the formula H_2O. The physical properties point to a polymerisation of the molecule, whilst a consideration of the chemical properties leads to the conclusion that the two atoms of hydrogen are functionally different, and that in reality water has a disymmetric formula.

A very interesting paper by M. T. Godlewski on certain radio-active properties of uranium is contained in No. 5 of the *Bulletin International* of the Cracow Academy of Sciences. A re-investigation has been made of the anomalous phenomena encountered by Meyer and Schweidler in studying the activity of uranium X. These authors had concluded that the decay curve of uranium X is not complementary to the recovery curve of uranium, but M. Godlewski considers that this only holds when the uranium nitrate containing the UrX is separated from its solution by crystallisation; when it is separated by evaporation to dryness at a temperature sufficiently high to remove the water of crystallisation, an abnormally high rate of decay is not observed. In fractionally crystallising uranium nitrate, uranium X, which is easily soluble in water, accumulates in the mother liquors; several crystallisations will completely deprive uranium nitrate of UrX. The author explains the increase of activity observed in the crystallisation of uranium nitrate as being due to an accumulation of UrX in the upper surfaces of the crystals; this appears to be confirmed by the observation that the activity of a crystal when turned over was found to be only one-third of the activity measured from the upper side. Experiments are brought forward to show that the first rapid decay of activity after crystallisation, which causes an uneven distribution of UrX throughout the plate, is due to the diffusion of UrX from the upper layers of the crystal, where it is more concentrated, to the lower, where the concentration is smaller. The view is held that the uranium X is dissolved in the crystals and the total mass of uranium in the form of a solid solution.

A second and revised edition of the section of the report issued by the Engineering Standards Committee dealing with standard locomotives for Indian Railways has been published by Messrs. Crosby Lockwood and Son at 10*s*. 6*d*. net.

We have received from Messrs. John J. Griffin and Sons, Ltd., a copy of their "H" list dealing with apparatus for use in the teaching of hydrostatics and pneumatics. The excellence of the illustrations and the lucidity of the brief descriptions make the catalogue a very serviceable one.

A circular from the bio-chemical department of the University of Liverpool announces that the first number of a new periodical—the *Bio-Chemical Journal*—will be issued in January. Contributions are invited, dealing with all portions of the subject of bio-chemistry in its widest sense. The journal will be issued monthly, in so far as material is available.

The University of Chicago Press has published a second edition of Dr. C. J. Chamberlain's "Methods in Plant Histology." The first edition of the book was reviewed in our issue for November 28, 1901 (vol. lxv. p. 75). The new issue contains both alterations and additions; and some of the improvements suggested in the review referred to have been made.

In noticing the illustrated catalogues of makers of scientific apparatus in this country from time to time, we have directed attention to the excellence of the illustrations accompanying the descriptions of the different instruments. A revised price-list of microscopes and accessories which has been received from the Bausch and Lomb Optical Co., Rochester, N.Y., is another instance of a carefully arranged and admirably illustrated catalogue. The catalogue provides information concerning microscopes made by this firm suitable for general laboratory work, advanced work, bacteriology, photomicrography, and a physician's needs. The necessary accessories are detailed fully, and clear descriptions make their special characteristics easily understood. The sole representatives of the company in this country and the colonies are Messrs. A. E. Staley and Co., 19 Thavies Inn, Holborn Circus, E.C.

OUR ASTRONOMICAL COLUMN.

Another New Comet, 1905*c*.—A telegram from the Kiel Centralstelle announces the discovery of a new comet, by Prof. Giacobini, of the Nice Observatory, on December 6·080.

At 16h. 53·7m. (Nice M.T.) the comet's position was

R.A. = 14h. 21m. 39·4s., dec. = +20° 59′ 29″,

and subsequent observations showed that its daily movement in R.A. amounted to +1° 08′ (= +4m. 32s.) and in dec. to −0° 26′.

From the above it is seen that, when discovered, the comet was about 10m. east and 1° 15′ north of Arcturus, and that it is apparently travelling slowly towards the constellation Serpens.

A second telegram from Kiel announces that the comet was observed at the Lick Observatory on December 8. The position at 17h. 16·5m. (Lick M.T.) was determined as R.A. = 14h. 32m. 58s., dec. = +19° 55′ 36″.

Circular No. 82 from Kiel states that the following elements and ephemeris have been computed by Mr. Morgan (Glasgow, Mo.) from observations made on December 6, 7, and 8, and communicated to the Centralstelle by Prof. E. C. Pickering:—

Elements.

T = 1906 January 16·20 (G.M.T.).

$$\left.\begin{array}{l} \infty = 213^\circ\,56' \\ \text{☊} = \ \ 93\ \ 21 \\ i = \ \ 44\ \ 23 \end{array}\right\} 1905\cdot0$$

$$q = 0\cdot0928$$

Ephemeris 12h. G.M.T.

1905		α h. m. s.		δ ° ′		Brightness
Dec. 14	...	15 1 28	...	+17 1		
18	...	15 24 56	...	+14 22		
22	...	15 50 48	...	+11 13	...	4·22

The computed brightness for December 10 was 1·66, the brightness at time of discovery being taken as 1·0.

Comet 1905*b*.—A number of observations of comet 1905*b* (Schaer's) are recorded in No. 4057 of the *Astronomische Nachrichten*.

Using the Bruce telescope, and exposing for fifty-five minutes, Prof. Wolf photographed the comet on November 21, and obtained an image which showed the object to be unsymmetrical. A fine, faint tail was seen to issue from the coma in a position angle of 92°, reckoning from the direction of the comet's path. This tail was curved, with the concave side preceding, and at a distance of 22′ from the nucleus it was broken, the second part having a slightly different direction to the first.

On November 20 Prof. Wolf was able to see the comet with the naked eye, and estimated its magnitude to be about 5·5. On November 21 he found it to be about 6·3m., and on November 24 observed that it had decreased to 7·0.

The ephemeris calculated by Herr M. Ebell gives the position of this comet on December 15 as

α = 23h. 32m. 16s., $\delta = -10^\circ\ 30'\cdot5$,

and its brightness as about 0·04 of that at the time of discovery.